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WATER QUALITY MEMORANDUM
Utah Coal Regulatory Program

April 14, 2010

TO: Internal File

THRU: James D. Smith, Permit Supervisor

FROM: Steve Christensen, Environmental Scientist SLC

RE: 2008, 4th Quarter Water Monitoring, Canyon Fuel Company (CFC), LLC, Dugout Mine, C/007/0039-WQ08-4, Task ID #3184

The Dugout Canyon Mine is currently operational in the Book Cliff Mountain range of Carbon County, UT. Water monitoring data is submitted quarterly to the Division EDI database. Beginning on page 7-40 of the approved Mining and Reclamation Plan (MRP), water monitoring protocols and sampling requirements are provided for surface water, ground water, monitoring wells and Utah Pollutant Discharge Elimination System (UPDES) outfalls. Tables 7-4 and Table 7-5 list the individual monitoring sites and their sampling protocols for ground water and surface water respectively.

1. Was data submitted for all required sites?

Springs YES [X] NO [ ]

The approved MRP outlines the operational and post-mining monitoring of fourteen springs (200, 203, 227, 259 259A, 260, 321, 322, 324, SC-100, SC-116, SC-14, SC-65 and SP-200). The locations of these springs are depicted on Plate 7-1, Hydrologic Monitoring Stations. Groundwater discharge from the old Gilson coal seam workings is also monitored and identified as location MD-1.

Data was submitted for all spring monitoring sites with measurable flow.

Streams **YES [X] NO [ ]**

The approved MRP outlines the monitoring of thirteen stream sites (323, DC-1, DC-2, DC-3, DC-4, DC-5, FAN, PC-1A, PC-2, PC-3, RC-1, SS-1 and SS-2). The locations of these streams are depicted on Plate 7-1, Hydrologic Monitoring Stations.

Data was submitted for all spring monitoring sites with measurable flow.

Wells **YES [X] NO [ ]**

The approved MRP outlines the sampling of three monitoring wells (GW-10-2, GW-11-2 and GW-24-1). Table 7-4 and Section 731.200 of the MRP specify that the Permittee will obtain quarterly water level measurements from the wells. Due to the ages of the wells and deterioration of the casing materials, water quality data is not collected.

Monitoring well GW-24-1 became blocked during the winter of 2000 and was last sampled in September of 1998. The well was removed from monitoring after the 4th quarter of 2004. Monitoring well G-11-2 was last monitored in October 2007. Since that time, the Permittee has reported that the well has appeared to have "caved in". Monitoring well GW-10-2 is still functioning and actively monitored for water level.

Though not required by the approved MRP, three additional monitoring wells (DH-1, DH-2 and DH-3) are monitored at the waste rock disposal site. The wells water levels are monitored quarterly with additional water quality sampling obtained from DH-1 during low flow periods (i.e. 3rd or 4th quarter).

Data was submitted for all monitoring wells with measurable/accessible water levels.

UPDES **YES [X] NO [ ]**

Operational monitoring is required monthly for six active UPDES outfalls (Permit No. UT0025593):

- **001**-Mine water discharge to Dugout Ck.,
- **002**-Sedimentation pond discharge to Dugout Ck. (disturbed area runoff),
- **003**-Storage water discharge to Dugout Ck. (30,000-gallon water tank discharge),
- **004**-Sedimentation pond (waste rock site) discharge to Grassy Trail Ck. Tributary,
- **005**-Pace Canyon fan portal breakout, mine water discharge to Pace Ck.
- **006**-Sediment trap culvert discharge to Pace Creek (disturbed area runoff from Pace Canyon Fan facility).

Specific effluent limitations and self-monitoring requirements as outlined in the UPDES permit are presented below:

Effluent Characteristics	Effluent Limitations
TDS, tons/day	1.0
Total Suspended Solids (TSS), ppm	70
Total Iron, ppm	1.1
Oil & Grease, ppm	10
Total Dissolved Solids (TDS), ppm	2,400
pH	9

3,000 parts per million (ppm) is the water quality standard for total dissolved solids (as established by the Department of Water Quality) for both Pace Creek and Dugout Creek.

Outfalls 001, 003 and 005 produced average flow values for the quarter of 276 gallons per minute (gpm), 8.0 gpm and 82.8 gpm respectively. In each instance, the water quality values that were reported fell within the Permittee's established UPDES compliance levels as well as within two standard deviations from the mean. The remaining outfalls did not report any flow for the quarter.

2. Were all required parameters reported for each site?

Springs **YES [X] NO [ ]**

The required data was submitted for all spring-monitoring sites with measurable flow.

Streams **YES [X] NO [ ]**

The required data was submitted for all stream-monitoring sites with measurable flow.

Wells **YES [X] NO [ ]**

The required data was submitted for all monitoring wells with measurable/accessible water levels.

UPDES **YES [X] NO [ ]**

The required parameters were reported when discharges took place.

3. Were irregularities found in the data?

Springs YES [ ] NO [X] .

Four springs reported no observable flow (NOF). Spring 200 had not reported a measurable flow since the 2nd quarter of 2001. Spring 227 has never reported a measurable flow. Spring 259 last reported a measurable flow in the 3rd quarter of 2001. Spring SC-100 has not reported a measurable flow since the 2nd quarter of 2008.

During the previous quarter (WQ08-3), spring 203 had reported a field conductivity value outside of two standard deviations (1,556 umhos/cm). The reported field conductivity value for this quarter was reported within two standard deviations of the data set (918 umhos/cm).

Spring SC-116 had reported values outside of two standard deviations for dissolved calcium (D-Ca), sulfate (SO4), total dissolved solids (TDS) and total cations (T-Cats) the previous quarter (WQ 08-3). The reported values for the aforementioned parameters had returned to within two standard deviations of the data set.

Spring SP-20 had reported an elevated field conductivity value the previous quarter (771 umhos/cm). The reported field conductivity value for this quarter was reported within two standard deviations of the data set (562 umhos/cm).

Streams YES [X] NO [ ]

Several sites reported increased concentrations outside of two standard deviations. Dissolved sodium (D-Na) and chloride were elevated at monitoring site DC-1. PC-1A reported elevated levels of dissolved calcium (D-Ca) and total dissolved solids (TDS). Dissolved magnesium (D-Mg) was outside of two standard deviations for monitoring site PC-2. Monitoring site DC-3 reported elevated levels of dissolved potassium (D-K).

Wells YES [X] NO [ ]

Monitoring well DH-1 reported elevated levels of dissolved calcium (D-Ca) and Chloride (Cl), 353 parts per million (ppm) and 580 ppm respectively.

Monitoring well GW-10-2 reported a depth to water that was outside of two standard deviations (747.58').

UPDES YES [ ] NO [X]

4. On what date does the MRP require a five-year resampling of baseline water data.

The resampling of baseline data will next be performed in July 2014. In addition, one water sample will be collected at each spring sampling point during low flow period every fifth year, during the year preceding re-permitting. These samples will be obtained for the analysis of

baseline parameters (See Table 7-4).

5. Based on your review, what further actions, if any, do you recommend?

No further action is necessary relative to this quarter's water monitoring activity.

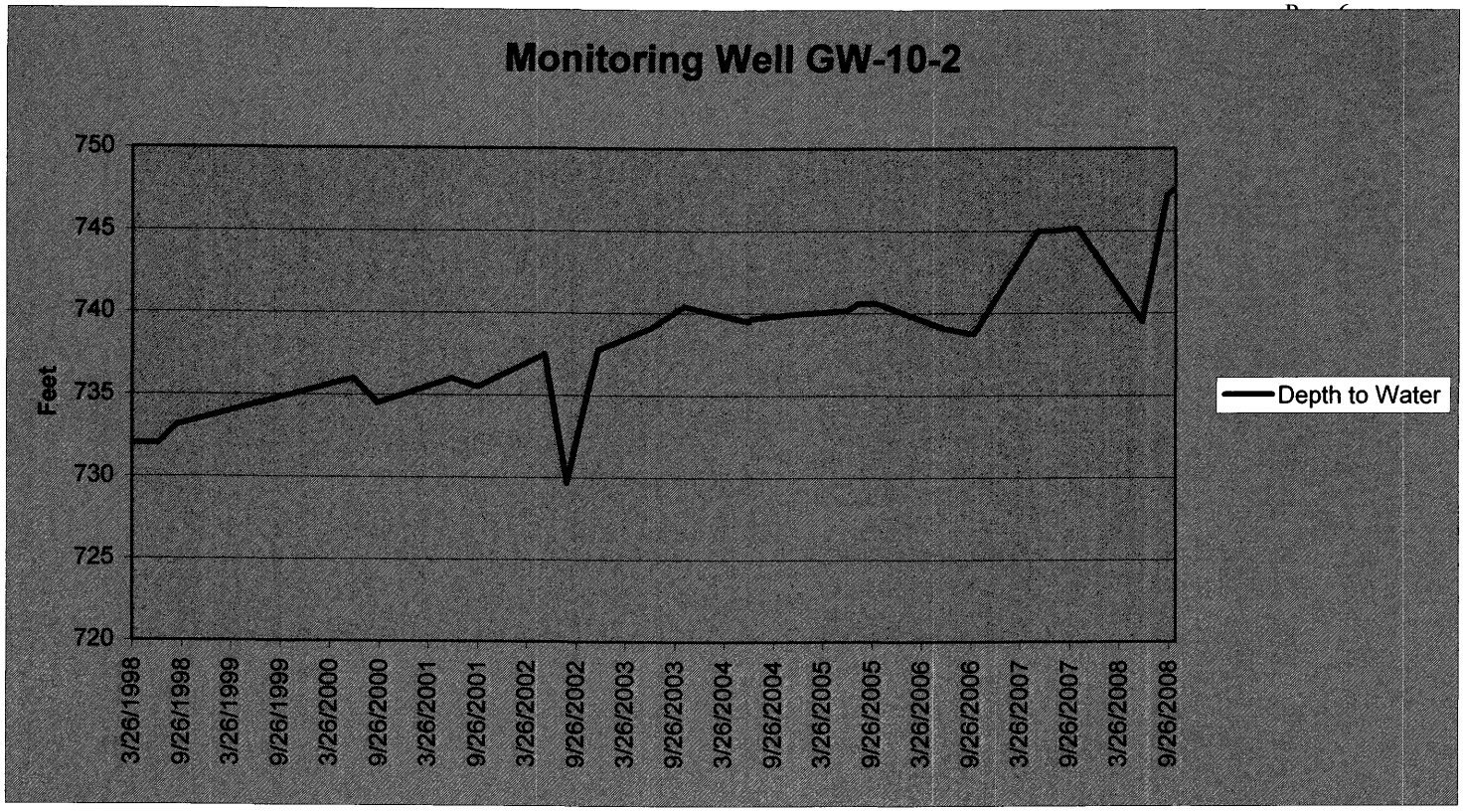
However, during the next mid-term review, the water-monitoring program in the approved MRP should be revised.

Ground water monitoring wells GW-24-1 and G-11-2 have become impacted to the degree that obtaining measurements/samples is not possible. The MRP and Division EDI database should be revised to reflect the current condition on the ground.

The approved MRP should also be revised to reflect the active monitoring of wells DH-1, DH-2 and DH-3.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? **[ ] Yes [X] No**

7. Follow-up from last quarter, if necessary. Did the Mine Operator submit all the missing and/or irregular data (datum)? **[ ] Yes [X] No**


Monitoring Well GW-10-2
750
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Feet
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Depth to Water